Space Weather Forecast

Issued on Friday, 03 June 2022 at 13:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor Storm intervals with a slight chance of G2/Moderate Storm either later Day 3 or early Day 4 (05-06 June) from possible CME arrival(s).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Very Low, with no significant flares during the period. There are four sunspot regions on the visible disc, with the most prominent groups in the far northwest quadrant and another in the southern central disc. The other two regions are small, simple spots. No Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery in the past 24-hours.

Solar Wind / Geomagnetic Activity: The solar wind has been at background levels through the period, reducing from around 370km/s to 320km/s. Wind speed has declined slightly from around 400 km/s to near 360 km/s. The interplanetary magnetic field strength has been weak, with the north-south component varying weakly, but predominately in the negative direction. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of solar energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low to Very Low, with a chance Common-class flares and a slight chance of Moderate-class flares.

Solar Wind / Geomagnetic Activity: Two filament lift-offs have been observed, the first around 01/0100 UTC, and the second around 02/0530 UTC. They have both given CMEs with the potential for a glancing blow at Earth. These two CMEs may combine for an arrival either later on Day 3 (05 June) or during Day 4 (06 June). Both CME assessments carry low confidence, however.

Aside from the CMEs, background wind speeds are expected to persist through the period. Geomagnetic activity is forecast to be predominately Quiet through to Day 3, but increasing to Unsettled to Active with a chance of G1/Minor Storm, and a slight chance of a G2/Moderate Storm, if we see the CME(s) either later Day 3 or early Day 4.

Energetic Particles / Solar Radiation: The count rate of solar energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	30	30
Strong	G3	No	1	1	2	2
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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